Chasing the Rising Sun: A Computable General Equilibrium Evaluation of Potential Australasia-Japan FTAs

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Niven Winchester[*]
Department of Economics
University of Otago
P.O. Box 56
Dunedin
New Zealand

Email: nwinchester@business.otago.ac.nz
Tel: + 61 3 479 8648
Fax: + 61 3 479 8174

Abstract

We investigate the consequences for New Zealand of the formation of various free trade areas (FTAs) involving New Zealand, Australia and Japan using a computable general equilibrium model of global production and trade. We find that New Zealand will not experience a significant increase in welfare due to a New Zealand-Australia-Japan FTA, but the formation of an Australia-Japan FTA may cause a large reduction in New Zealand welfare.

Key words: trade liberalisation, free trade agreements, computable general equilibrium modelling

JEL codes: F15, D58

1. Introduction

Many nations frustrated by the slow pace of multilateral trade liberalisation have launched bilateral negations with key trading partners. However, the discriminatory nature of such agreements has generated an additional incentive for nations to pursue free trade deals. That is, many governments now seek regional trade agreements to safeguard market access for exports. In Australasia, New Zealand and Australia signed the Closer Economic Relations (CER) Agreement – one of the most comprehensive free trade agreements in the world – in 1983. In recent years these nations have pursued similar FTA partners: New Zealand and Australia both have FTAs with Singapore and Thailand, and negotiations concerning separate agreements between the two CER nations and China and Malaysia are well developed. Additionally, a regional free trade area (FTA) involving New Zealand, Australia and the Association of South East Asian Nations (ASEAN) is currently being negotiated. One difference, however, is that Australia has a FTA with the US whereas New Zealand does not.[1]

A major omission from the two CER nations' FTA portfolios concerns Japan. The world's second largest economy is New Zealand's third largest trading partner (after Australia and the US) and Australia's largest export market. The announcement by the Australian and Japanese Prime Ministers in April 2005 that there would be a joint feasibility study into a FTA between the two countries is a strong indication that Australia will soon add Japan to its list of FTA partners. Conversely, although New Zealand's Trade Minister has suggested that a free trade deal with Japan would be

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[1] Another difference concerning bilateral trade negotiations is that, as of January 2006, the New Zealand-Singapore FTA agreement will be superseded by the Trans-Pacific Strategic Economic Partnership Agreement (Trans–Pacific SEP) – a regional FTA agreement involving the two original member nations and Brunei and Chile. However, the Trans-Pacific agreement is likely to have little discriminatory impact as trade volumes between the member nations are small.

desirable, negotiations between the two nations are yet to begin. This article focuses on the impact of various FTAs involving the two CER nations and Japan on New Zealand. We find that New Zealand will not experience a significant increase in welfare due to a New Zealand-Australia-Japan FTA, but the formation of an Australia-Japan FTA (that excludes New Zealand) may cause a large reduction in New Zealand welfare.

This paper has three further sections. Section 2 outlines the salient features of our CGE model and database. Section 3 describes our liberalisation scenarios and reports results from our modelling exercises. Section 4 summarises our results and offers some conclusions.

2. Model Structure and Aggregation

We conduct simulations using the GTAPinGAMS model (Rutherford and Paltsev, 2000). The model is a perfectly competitive, static, general equilibrium representation of global trade and production. An overview of the model in provided below.

Expenditure

Expenditure on final goods and services in each region is controlled by a representative consumer who allocates expenditure in a utility-maximising fashion across investment, government consumption, and private consumption. Total investment and government expenditure are fixed in each region. Private consumption is governed by a Cobb-Douglas utility function, where each commodity is represented by a composite of domestically produced and imported varieties. Government expenditure is modelled in an identical fashion, which allows the composition of

public expenditure to respond to changes in relative prices even though the aggregate level of public expenditure is exogenous.

Production

Composites of intermediate inputs and primary factors are combined in a Leontief nest in the top level of the production specification for each sector. The intermediate input composite is derived from a further Leontief aggregation of intermediate inputs by product type. Primary factors enter in a Cobb-Douglas aggregator. Capital and skilled and unskilled labour are employed in all sectors. Land and natural resources are only used in agricultural and resource-based sectors respectively.

Imports

Imports are differentiated from domestic commodities and by region of origin according to the Armington assumption (Armington, 1969). That is, for each good, imports from different regions are gathered in a constant elasticity of substitution (CES) nest to create an import composite.[2] The import composite is combined in a further CES nest with the domestically produced variety to generate a composite that is purchased by firms, the government, or the private household. Transport costs are also included in the import specification. Transport services from different regions are brought together by a Cobb-Douglas aggregator to produce a transport composite. The transport composite and exports are used in fixed proportions.

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[2] Our elasticity parameters in the import specification are sourced form the GTAP.

Closure

With respect to fiscal closure, as a representative household controls all consumption expenditure, budget deficits are financed via (implicit) transfers from households. A neoclassical factor market closure is used. Specifically, factor prices are endogenous and factors are perfectly mobile across sectors. Macroeconomic closure is such that savings is investment driven and the real exchange rate adjusts to maintain a constant current account deficit.

Database

Our model is calibrated using version 6 of the Global Trade Analysis (GTAP) database (Dimaranan and McDougall, 2002). The database "combines detailed bilateral trade, transport and protection data characterising economic linkages among regions, together with individual country input-output data bases which account for inter-sectoral linkages within regions" (Hertel, 2002, p.1-2). The most recent version of the database provides a representation of the global economy in 2001 and identifies 87 regions, 57 sectors and five factors of production.

Aggregation of the database is necessary for computational convenience. Our regional and commodity aggregations and the composition of each, in terms of components recognised by the GTAP database, are outlined in Table 1. Our regional aggregation identifies the three countries of interest (New Zealand, Australia and Japan), regions that have recently signed, or seem likely to agree to, a FTA with one or more of the CER nations or Japan (i.e., the US, Singapore, China, Mexico and ASEAN), and regions likely to be included in FTAs that exclude New Zealand, Australia and Japan that may have a significant effect on the New Zealand economy (i.e., Mercosur and

FTAA regions).[3] Our commodity aggregation identifies 12 sectors in agriculture, food processing and minerals, seven manufacturing sectors, and, as the GTAP does not quantify barriers relating to trade in services, a single service sector. Our factor aggregation recognises the complete set of GTAP factors (land, resources, capital and skilled and unskilled labour).

[Table 1 about here]

We summarise trade flows between CER nations and Japan in Table 2. The first section in Table 2 examines trade between New Zealand and Japan. The first column in this section reports New Zealand exports to Japan for each commodity as a portion of aggregate New Zealand exports to this nation. The second column presents total New Zealand exports (to all destinations) for each commodity as a proportion of aggregate New Zealand exports. The third column displays New Zealand imports from Japan for each commodity as a portion of aggregate New Zealand imports from Japan, and the fourth column presents total New Zealand exports (to all destinations) for each commodity as a proportion of aggregate New Zealand exports. Similar trade shares are reported for Australia in the second section of Table 2.

The trade statistics reveal that the makeup of New Zealand's exports to Japan differs from the composition of aggregate New Zealand exports. Specifically bilateral New Zealand exports are dominated by wood and paper, and mineral and metal products – which combined account for more than 40% of total New Zealand exports to Japan – and the bilateral exports shares of New Zealand's two most significant export

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[3] As there are a number of composite regions in the GTAP database, there are several small inconsistencies in our regional aggregation. These discrepancies are highlighted in the notes to Table 1.

commodities, meat and dairy products, are relatively small. Also, New Zealand bilateral exports shares for other food products (10.38%) and vegetables, fruit and nuts (6.81%) are significantly higher than this nation's aggregate export shares. On the import side, Japanese products sold in New Zealand predominantly consist of transport equipment (43.69%) and other machinery and equipment (23.10%).

Turning to Australia-Japan trade, minerals account for 48.68% of Australia's total exports to Japan, which is significantly larger than minerals share in total Australian exports. Other situations where bilateral exports shares are significant and large relative to aggregate exports shares include Australian exports of meat products (8.7%), crops (6.21%) and other food products (4.88%). Metal products also account for a sizeable share of Australian bilateral exports but the bilateral exports share is much lower than Australia's aggregate export share. Like New Zealand, Australian imports from Japan are dominated by transport equipment (40.96%) and other machinery and equipment (24.27%).

Regional import and export shares are also of interest. Japanese products account for 8.47% of total imports entering New Zealand and 11.87% of total exports from New Zealand are shipped to Japan. The corresponding figures for Australia are 17.42% and 11.38%. In contrast, bilateral imports from New Zealand and Australia account for only 0.58% and 3.47%, respectively, of total Japanese imports, and only 0.29% and 1.77%, respectively, of total Japanese exports are destined for New Zealand and Australia.

Ad valorem tariffs imposed on trade between New Zealand and Japan, and Australia and Japan are reported in Table 3. These data reveal that, in general, New Zealand and Australian tariffs imposed on Japanese products are relatively low (two exceptions include Australian tariffs on transport equipment and textiles clothing and footwear), and Japanese tariffs on manufactures sourced from Australasia are low but are quite severe on a number of agricultural products (meat and dairy products, and processed rice and sugar in particular).

3. Liberalisation Scenarios and Results

We construct a futuristic baseline before implementing our FTA simulations to reflect important changes in the global trading environment that have occurred since 2001 or seem likely to eventuate before an Australia-Japan FTA is operational.[4] Specifically, with respect to regional agreements involving the two Australasian nations, we shock the database to induce free trade within ASEAN and between this region and New Zealand and Australia,[5] the two nations' FTAs with China, New Zealand's Trans-Pacific treaty with Singapore and Chile, and Australia's FTA with the US. Regarding Japanese bilateral liberalisation, our baseline incorporates FTAs between this nation and ASEAN, China, South Korea and Mexico. Third-party agreements modelled in our baseline include ASEAN-South Korea, Chile-South Korea, and the enlargement of the EU in 2004.[6] Finally, we capture key changes in unilateral and multilateral trade liberalisation by simulating reductions in trade barriers representative of New Zealand's tariff reduction programme, China's WTO commitments, and the

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[4] Our baseline generation also removes tariffs on trade between New Zealand and Australia to reflect the CER agreement between the two nations. We do this using the "impose" routine bundled with the GTAPinGAMS package (see Rutherford and Paltsev, 2000).

[5] Simulating free trade between New Zealand and Australia and ASEAN implies that the two CER nations' FTAs with Malaysia, Singapore and Thailand are also included.

[6] As all nations in the EU25 are included in a single region in our model, we simulate EU enlargement by removing tariffs on intra-EU trade.

elimination of MFA quotas.[7] Unless stated otherwise, all shocks representing regional

FTAs included in the baseline simulate free trade between member nations in all

commodities (expect for our Australia-US FTA shock which maintains trade

restrictions on sugar and stipulates limited liberalisation of meat and dairy trade).

Our simulation exercises explore Australia-Japan (AUS-JPN) and Australia-New

Zealand-Japan (ANZ-JPN) FTAs under three different liberalisation scenarios: (1)

elimination of bilateral/regional tariffs on all commodities, (2) elimination of

bilateral/regional tariffs on all commodities except rice and sugar, and (3) elimination

of bilateral/regional tariffs on only non-agriculture trade.[8] Two other FTAs that

exclude New Zealand, an EU-Mercosur FTA and the Free Trade Area of the

Americas (FTAA), are considered in a fourth set of simulations to provide a

benchmark for comparison.

The results are summarised in Tables 4-8. Changes in welfare are the summary

statistics of most interest. We measure these changes using the Hicksian equivalent

variation in income. Equivalent variation in 2001 US dollars and equivalent variation

as a fraction of GDP are reported in Tables 4 and 5 respectively. Proportional changes

in regional exports and imports for New Zealand, Australia and Japan are reported in

Tables 6-8.[9]

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[7] Many of the FTAs incorporated in our baseline are analysed elsewhere. Specifically, Winchester (2005) examines several FTAs involving New Zealand; a number of Asia-Pacific FTAs are simulated by Scollay and Gilbert (2001), MFTA (2004) evaluates a New Zealand-China FTA; and Brown, Kiyota and Stern (2005), Andriamanajara and Tsigas (2004), Winchester and Richardson (2005), and CIE (2001) consider an Australia-US FTA.

[8] Our restrictive FTA scenarios are influenced by the exclusion of rice and sugar from Japan's FTA with Thailand and concerns about other agriculture commodities expressed by Japan during preliminary discussions relating to a FTA between this nation and Australia.

[9] Due to space constraints, a large amount of summary data are not reported in table format, but important changes in, for example, bilateral trade flows and regional outputs are highlighted in the text and are available from the author upon request.

[Tables 4-8 about here]

The results from our first set of simulations suggest that a comprehensive FTA between Australia and Japan would decrease New Zealand and Japanese welfare by 0.384% and 0.005% respectively and raise welfare in Australia by 0.881%. The main driver behind the fall in New Zealand welfare is exporters' loss of market share in Japanese markets. The largest decrease in New Zealand-Japan bilateral exports are in sugar (52.2%) and crops (43.1%), but more moderate declines in exports of meat (38.0%) and dairy products (12.8%) have a more significant impact of New Zealand welfare. Conversely, significant increases in New Zealand exports of crops and meat and animal products to Australia provide an offsetting effect.

The increase in Australian welfare results from an increase in export competitiveness in the nation's most significant overseas market and domestic efficiency gains. Simulated increases in agriculture exports to Japan are quite considerable: rice and sugar exports increase by a factor greater than 10, and bilateral exports of dairy products, meat products, and crops all rise by nearly 100%. Overall, Australian exports to its largest trading partner increase by 113.6%. With respect to bilateral imports, Australian imports of textiles clothing and footwear and transport equipment from Japan increase by 106.9% and 89.4% respectively. The displacement of domestically produced textiles, clothing and footwear and transport equipment in Australian markets causes production in both of these sectors to fall by around 10%.

The reduction in Japanese welfare appears to result from the presence of strong terms of trade effects. In this connection, Brown (1987) demonstrates that terms of trade movements are considerable in Armington-type models because national product differentiation implies a country has a complete monopoly in the market for its exports. Under this assumption, the removal of a nation's tariffs results in a reallocation of resources towards sectors in which the nation has a comparative advantage, increased export supply, and ultimately causes its terms of trade to deteriorate. Significant simulated increases in Japan's export supply of transport equipment and other machinery and equipment, which combined account for more than 40% of the nation's export earnings, is evidence in favour of this assertion.[10]

When there is free trade between New Zealand, Australia and Japan, the results suggests that New Zealand will experience a welfare gain relative to the situation when it is excluded from an Australasia-Japan FTA but will suffer a small welfare loss (0.043%) relative to the status quo. New Zealand exports destined for Japan increase by 34.1% in aggregate, primarily due to significant rises in bilateral dairy (890.6%) and meat (268.8%) exports. On the import side, the amount of Japanese other manufactures and transport equipment sold in New Zealand increase by 40.0% and 39.4% respectively.

Australia's welfare gain is significant when there is a comprehensive ANZ-JPN FTA but slightly smaller than when Australia has an exclusive arrangement with Japan. The difference between the changes in Australian and New Zealand welfare combined

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[10] The relatively large increase in US welfare when there is a comprehensive AUS-JPN FTA warrants explanation. We conjecture that the majority of this increase can be attributed to increased Japanese exports of transport equipment and other machinery and equipment to the US. Statistics showing that about 50% of total Japanese exports of transport equipment and more than one quarter of Japanese other transport and equipment products sold overseas are shipped to the US supports our hypothesis.

with the observation that proportional increases in the majority of Australian agriculture exports to Japan are larger than the corresponding changes in New Zealand exports in this simulation suggests that Australia is favoured relative to New Zealand by an ANZ-JPN FTA. From Japan's perspective, whether a not New Zealand is included in an Australasia-Japan FTA has little impact on welfare.

Results for remaining simulations are expressed relative to a baseline that excludes rice and sugar from all FTA negotiated by Japan included in the baseline. As might be expected in the presence of large negative Japanese terms of trade effects, we observe that Australia's welfare gains are smaller and Japan's welfare losses are larger when limited AUS-JPN and ANZ-JPN FTAs are evaluated than when the equivalent comprehensive agreements are considered. With regard to New Zealand, as the increase in Australian rice and sugar production due to the removal of tariffs on these products should increase New Zealand's market share in other agriculture products, it seems reasonable to anticipate that New Zealand would be worse off in the restrictive agreements relative to the all-inclusive treaties. The opposite is observed. Further investigation reveals that the counterintuitive results are a consequence of the different baselines used in the two sets of simulations. When we evaluate changes under the two sets of simulations relative to a common baseline, our priors are confirmed.

Turning to the set of simulations that considers Australasia-Japan FTAs when barriers on agriculture trade are maintained, the results reveal that New Zealand and Japan would gain from both AUS-JPN and ANZ-JPN regional agreements and Australia would lose. In assessing the change in New Zealand welfare from an ANZ-JPN FTA

when agriculture is excluded relative to those in other simulations, two effects concerning the removal of agriculture tariffs must be evaluated. The first and most obvious effect is that the removal of such barriers on Australasian products will give New Zealand exporters an advantage relative to exporters from excluded nations. The second and more subtle effect is that, as Australian agricultural products entering Japan generally attract a higher tariff than those from New Zealand, an ANZ-JPN FTA will reduce New Zealand exporters' competitiveness relative to their Australian counterparts. The results form our all-inclusive FTA simulations suggest that the latter effect dominates. We investigate the issue further by implementing an ANZ-JPN FTA simulation in which meat products, a major New Zealand export commodity that faces a Japanese tariff equal to about one-half of that levied on Australian products, is the only agriculture commodity excluded (in addition to rice and sugar). The simulated increase in New Zealand welfare is about 0.02 percentage points higher than when all agriculture trade is restricted. This result is further evidence that the second effect dominates.

The consequences of an Australia-US FTA are also examined by Siriwardana and Dollery (2003) and DFAT (2005). Siriwardana and Dollery use the standard GTAP model and version 4 of the GTAP database to simulate full trade liberalisation and trade liberalisation excluding agriculture scenarios. According to these authors, welfare changes resulting from full free trade liberalisation between New Zealand, Australia, and Japan are (in millions of 1995 US dollars) 5,4803.6, 447.4, and -2,3205.2 respectively. There are several differences between these numbers and the estimated welfare changes in our analysis. Specifically, changes in Australian and Japanese welfare are much larger in Siriwardana and Dollery's study than ours and

the two authors simulate an increase in New Zealand welfare and we do not. Differences in benchmark tariffs employed by the two studies is the most likely reason for these discrepancies (Siriwardana and Dollery's study employs a database representative of the global economy in 1995 whereas our study is calibrated using 2001 data). One similarity, however, is that, like us, Siriwardana and Dollery observe strong negative terms of trade effects for Japan following an AUS-JPN FTA. Siriwardana and Dollery's trade liberalisation excluding agriculture scenario generates results similar to their full free trade estimates. This is because only trade in raw agriculture (commodities 1 – 5 in our study) and not food manufacturers (commodities 7 – 11) is restricted in the authors' second simulation. This makes comparison between Siriwardana and Dollery agriculture-excluded simulation and ours difficult.

DFAT (2005) investigates the consequences of a comprehensive AUS-JPN FTA using the APG-Cubed and GTAP models. Overall, the DFAT study produces more optimistic estimates of the benefits to member nations of an AUS-JPN FTA than we do. The reason for this appears to be the inclusion of (unspecified) dynamic productivity gains, which are not considered in our analysis, in DFAT's modelling framework.

Our final set of simulations allows us to assess the impact of New Zealand's possible exclusion from (or late arrival to) an Australasia-Japan FTA relative to the effect of New Zealand's exclusion from other regional trade agreements. The EU-MRC FTA and FTAA exercises simulate free trade in all commodities between member nations so the results should be compared to the outcomes from the AUS-FTA exercise in our

first set of results. Comparing the outputs illustrates that the loss from a comprehensive AUS-JPN FTA is roughly twice that from either an EU-MRC FTA or a FTAA.

5. Conclusions

This study has analysed several Australasia-Japan FTA scenarios. Our results indicate that New Zealand can, at best, only expect a small welfare gain from an ANZ-JPN FTA, and a comprehensive AUS-JPN FTA would result in a large loss in New Zealand welfare relative to what would result from other FTAs that exclude New Zealand. The decrease in New Zealand welfare from an AUS-JPN is also large when compared to the expected benefits generated by New Zealand's current bilateral negotiations. Winchester (2005) estimates that the increase in New Zealand welfare from all FTAs involving this country that have recently been completed or are currently in the pipeline (bilateral FTAs with China, Malaysia and Thailand and New Zealand-Chile-Singapore and New Zealand-Australia-ASEAN regional agreements) is equal to 0.44%, which is approximately equal to the loss from missing out on a Australasia-Japan FTA.

Finally, several caveats should be noted in interpreting our results. First, the non-existence of tariffs on trade in services represents a shortcoming in our analysis. Second, our simulations do not capture welfare changes associated with the realisation of economies of scale, dynamic gains due to additions to the capital stock, and productivity improvements due to the transfer of technology. Third, an Australasia-Japan FTA will be dominated by broader trade liberalisation in the near future, such as the reduction of tariffs within the APEC area and multilateral trade liberalisation

facilitated by the WTO. Consequently, in the absence of any first-mover advantages for exporters, the losses from missing out on an Australasia-Japan or the gains from being included in such an agreement may only occur for a short period of time.

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Table 1: Regional and commodity aggregation

Regions	Commodities
1. **New Zealand**	1. **Vegetables, fruits and nuts**
2. **Australia**	2. **Crops**
3. **Japan**	Paddy rice; wheat; cereal grains; oil seeds; sugar cane, sugar beet; plant-based fibres; crops nec;
4. **Singapore**	
5. **Korea**	
6. **China**	3. **Animal products**
7. **Rest of ASEAN**[1]	Bovine cattle, sheep and goats, horses; animal product nec; raw milk; wool, silk-worm cocoons;
Indonesia, Malaysia, Philippines, Thailand, Vietnam, Rest of South East Asia	
	4. **Forestry**
	5. **Fishing**
8. **EU25**	6. **Minerals**
Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Latvia, Luxemburg, Lithuania, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden	Coal, oil, gas, mineral nec
	7. **Meat products**
	Bovine meat products; meat products nec
	8. **Dairy products**
	9. **Processed rice**
9. **United States**	10. **Sugar**
10. **Mexico**	11. **Other food products**
11. **Chile**	Vegetable oils and fats, food products nec, beverages and tobacco products
12. **Mercosur**[3]	12. **Textiles, clothing and footwear**
Argentina, Brazil, Uruguay	Textiles; wearing apparel, leather products
13. **Rest of FTAA**[2]	13. **Wood and paper products**
Canada, Columbia, Peru, Venezuela, Rest of Andean Pact, Rest of South America, Rest of FTAA	Wood products; paper products, publishing
	14. **Mineral products**
	Petroleum, coal products; chemical, rubber, plastic products, mineral products nec
14. **ROW**	15. **Metal products**
All other regions	Ferrous metals; metals nec; metal products
	16. **Transport equipment**
	Motor vehicles and parts, transport equipment nec
	17. **Electronic equipment**
	18. **Other machinery and equipment**
	19. **Other manufactures**
	20. **Services**
	Electricity; gas manufacture, distribution; water; construction; trade; transport nec; water transport; air transport; communication; financial services nec; insurance; business services nec; recreational and other services; public administration, defence, education, health; dwellings

Note: (1) Includes Timor-Leste; (2) Includes Bermuda, Greenland, Saint Pierre and Miquelon, Falkland Islands, and French Guiana; (3) Excludes Paraguay.

Table 2: New Zealand, Australia and Japan trade shares (percent)

	New Zealand trade with Japan				Australian trade with Japan			
	Bilateral exports	**Aggregate exports**	**Bilateral imports**	**Aggregate imports**	**Bilateral exports**	**Aggregate exports**	**Bilateral imports**	**Aggregate imports**
Vegetables, fruits and nuts	6.81	4.26	0.01	0.59	0.48	1.03	0.00	0.26
Crops	1.33	0.46	0.21	0.69	6.21	5.50	0.04	0.42
Animal products	2.51	4.55	0.02	0.44	0.73	4.00	0.01	0.16
Forestry	5.57	2.65	0.00	0.02	0.11	0.08	0.00	0.01
Fishing	1.06	0.30	0.00	0.03	0.89	0.22	0.00	0.04
Minerals	3.26	0.82	0.00	3.38	47.68	20.17	0.01	2.68
Meat products	5.84	11.84	0.03	0.44	8.70	5.06	0.01	0.20
Dairy products	8.19	15.60	0.00	0.17	2.04	2.19	0.01	0.26
Processed rice	0.00	0.00	0.00	0.11	0.22	0.19	0.00	0.04
Sugar	0.17	0.13	0.01	0.42	1.07	1.01	0.00	0.03
Other food products	10.38	6.46	1.96	4.69	4.88	4.45	0.61	2.89
Textiles, clothing and leather	0.67	2.88	1.07	5.46	0.19	1.35	0.59	5.76
Wood and paper products	14.00	8.23	1.32	4.83	4.15	1.95	0.98	4.55
Mineral products	11.40	8.87	9.64	15.82	2.64	6.02	11.06	15.97
Metal products	15.60	5.39	3.66	5.04	9.95	15.24	4.42	5.23
Transport equipment	0.26	1.24	43.69	13.65	0.66	4.63	40.96	11.95
Electronic equipment	0.10	0.97	6.93	7.03	0.18	1.38	12.60	11.17
Other machinery and equipment	1.21	5.31	23.10	14.84	1.13	4.94	24.27	18.03
Other manufactures	1.52	1.44	1.77	2.09	0.67	1.14	1.26	2.49
Services	10.12	18.60	6.57	20.27	7.42	19.47	3.18	17.87
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: GTAP 6 Database.

Table 3: Ad valorem tariffs in New Zealand-Japan and Australia-Japan trade (percent)

	New Zealand-Japan trade, tariff imposed by:		Australia-Japan trade, tariff imposed by:	
	N. Zealand	Japan	Australia	Japan
Vegetables, fruits and nuts	-	6.67	-	49.30
Crops	0.17	0.69	-	69.41
Animal products	0.00	2.22	-	9.56
Forestry	0.28	0.21	-	0.10
Fishing	-	3.95	-	2.72
Minerals	-	0.00	0.02	0.02
Meat products	2.48	24.58	0.22	46.48
Dairy products	5.00	41.69	0.65	45.74
Processed rice	-	0.00	-	779.76
Sugar	-	292.69	7.09	316.04
Other food products	1.30	19.12	0.98	18.37
Textiles, clothing and leather	1.36	10.07	9.42	6.93
Wood and paper products	0.52	2.35	4.19	0.19
Mineral products	2.60	1.24	4.70	0.93
Metal products	2.91	0.06	5.67	0.37
Transport equipment	7.39	0.00	16.34	-
Electronic equipment	0.95	0.00	1.41	-
Other machinery and equipment	3.48	0.02	4.04	0.08
Other manufactures	4.64	1.05	2.17	0.38
Services	-	-	-	-
Average tariff	4.59	8.37	8.75	15.09

Source: GTAP 6 Database.

Table 4: Global welfare effects (equivalent variation, 2001 US dollars, million)

	(1) No excluded goods		(2) Rice and sugar excluded		(3) Agriculture excluded		(4) Alternative FTAs	
	AUS-JPN	ANZ-JPN	AUS-JPN	ANZ-JPN	AUS-JPN	ANZ-JPN	EU-MRC	FTAA
New Zealand	-174.682	-19.500	-143.430	9.765	10.735	23.807	-90.355	-86.846
Australia	2884.107	2850.609	2510.992	2479.242	-53.594	-62.905	48.213	-45.132
Japan	-187.051	-107.083	-1556.702	-1487.857	810.847	865.549	-201.010	-427.518
Singapore	342.329	303.994	227.866	188.363	-45.397	-47.304	12.909	-33.692
South Korea	-1378.777	-1379.688	-1080.949	-1082.417	97.479	100.271	-319.992	-351.082
China	-3956.069	-3937.632	-3268.768	-3252.272	343.965	351.396	-813.969	-799.306
Other Asean	-3854.737	-3845.790	-2524.389	-2513.155	257.079	262.388	-124.744	-219.759
EU25	-1069.638	-1092.508	-988.042	-1011.463	5.354	-0.452	3161.863	-1501.391
USA	13762.219	13632.231	11273.241	11150.572	-1526.311	-1589.196	-597.829	2398.387
Mexico	-944.311	-950.311	-841.480	-847.729	67.047	69.254	-126.685	233.085
Chile	-176.176	-175.543	-147.759	-147.230	16.960	17.347	130.624	329.935
Mercosur	184.555	182.983	151.839	150.397	-22.936	-23.906	5189.440	1353.250
Rest of FTAA	-655.325	-654.849	-568.225	-568.052	40.551	40.558	-199.703	519.237
Rest of World	-1718.217	-1711.378	-1520.709	-1514.821	148.475	149.848	-282.146	-541.778

Table 5: Global welfare effects (equivalent variation as a fraction of GDP)

	(1) No products excluded		(2) Rice and sugar excluded		(3) Agriculture excluded		(4) Alternative FTAs	
	AUS-JPN	**ANZ-JPN**	**AUS-JPN**	**ANZ-JPN**	**AUS-JPN**	**ANZ-JPN**	**EU-MRC**	**FTAA**
New Zealand	-0.384	-0.043	-0.315	0.021	0.024	0.052	-0.199	-0.191
Australia	0.881	0.871	0.768	0.758	-0.016	-0.019	0.015	-0.014
Japan	-0.005	-0.003	-0.043	-0.041	0.022	0.024	-0.006	-0.012
Singapore	0.442	0.393	0.294	0.243	-0.059	-0.061	0.017	-0.043
South Korea	-0.355	-0.355	-0.279	-0.279	0.025	0.026	-0.082	-0.090
China	-0.401	-0.400	-0.332	-0.330	0.035	0.036	-0.083	-0.081
Other Asean	-0.768	-0.766	-0.509	-0.507	0.052	0.053	-0.025	-0.044
EU25	-0.014	-0.015	-0.013	-0.014	0.000	0.000	0.042	-0.020
USA	0.137	0.135	0.112	0.111	-0.015	-0.016	-0.006	0.024
Mexico	-0.171	-0.172	-0.152	-0.153	0.012	0.013	-0.023	0.042
Chile	-0.300	-0.299	-0.252	-0.251	0.029	0.030	0.223	0.563
Mercosur	0.028	0.027	0.023	0.022	-0.003	-0.004	0.775	0.202
Rest of FTAA	-0.061	-0.061	-0.053	-0.053	0.004	0.004	-0.019	0.049
Rest of World	-0.056	-0.056	-0.050	-0.050	0.005	0.005	-0.009	-0.018

Table 6: Changes in New Zealand regional exports and imports (percent)

	Exports						Imports					
	(1) Full free trade		(2) Rice and sugar excluded		(3) Agriculture excluded		(1) Full free trade		(2) Rice and sugar excluded		(3) Agriculture excluded	
	AUS-JPN	ANZ-JPN	AUS-JPN	ANZ-JPN	AUS-JPN	ANZ-JPN	AUS-JPN	ANZ-JPN	AUS-JPN	ANZ-JPN	AUS-JPN	ANZ-JPN
Australia	4.02	0.40	3.15	-0.40	-2.06	-2.13	-13.27	-13.98	-11.09	-11.87	1.45	-0.51
Japan	-3.08	34.13	-3.16	32.96	0.40	4.78	2.64	31.41	2.26	31.13	-1.24	25.94
Singapore	-0.75	-5.72	-0.63	-5.61	0.16	0.15	2.45	2.50	2.09	2.14	-0.27	-1.28
South Korea	-0.52	-3.60	-0.36	-3.42	0.19	0.05	3.50	3.09	2.88	2.47	-0.37	-1.64
China	0.38	-3.33	0.63	-3.07	0.19	0.03	2.98	3.23	2.54	2.79	-0.31	-0.97
Other Asean	1.20	-2.15	1.81	-1.55	0.13	-0.01	4.46	4.38	2.85	2.78	-0.35	-1.39
EU25	-0.60	-4.21	-0.56	-4.14	0.17	0.05	1.87	1.01	1.57	0.72	-0.26	-1.99
USA	0.44	-3.27	0.33	-3.34	0.11	0.05	1.03	-2.28	0.90	-2.38	-0.29	-4.34
Mexico	-2.32	-6.46	-2.42	-6.53	0.16	-0.01	3.09	2.70	2.90	2.51	-0.26	-1.68
Chile	-0.69	-4.86	-0.67	-4.80	0.20	-0.01	2.91	4.51	2.66	4.21	-0.20	-0.34
Mercosur	-0.48	-3.75	-0.46	-3.69	0.17	0.08	2.14	2.89	1.93	2.64	-0.16	-0.86
Rest of FTAA	-0.53	-4.66	-0.60	-4.70	0.14	-0.01	2.37	2.65	2.18	2.44	-0.21	-1.32
Rest of World	-0.35	-4.18	-0.30	-4.10	0.19	0.07	1.72	2.00	1.47	1.74	-0.21	-0.88

Table 7: Changes in Australian regional exports and imports (percent)

	Exports						Imports					
	(1) Full free trade		(2) Rice and sugar excluded		(3) Agriculture excluded		(1) Full free trade		(2) Rice and sugar excluded		(3) Agriculture excluded	
	AUS-JPN	ANZ-JPN	AUS-JPN	ANZ-JPN	AUS-JPN	ANZ-JPN	AUS-JPN	ANZ-JPN	AUS-JPN	ANZ-JPN	AUS-JPN	ANZ-JPN
New Zealand	-13.27	-13.98	-11.09	-11.87	1.45	-0.51	3.34	0.40	3.15	-0.40	-2.06	-2.13
Japan	113.57	112.76	92.50	91.77	1.39	1.45	47.92	54.02	53.72	53.66	47.91	47.77
Singapore	-17.82	-17.95	-15.12	-15.27	1.32	1.38	0.61	1.48	0.71	0.89	-2.23	-2.25
South Korea	-16.03	-15.92	-13.60	-13.48	1.22	1.28	-3.80	-2.44	-3.13	-3.11	-6.19	-6.22
China	-21.38	-21.22	-19.51	-19.35	1.03	1.08	3.01	3.79	2.82	2.86	-1.86	-1.88
Other Asean	-21.24	-21.02	-17.07	-16.84	1.45	1.52	2.16	2.92	1.06	1.13	-2.11	-2.13
EU25	-15.26	-15.15	-12.99	-12.88	1.16	1.21	-0.30	0.74	-0.22	-0.21	-4.58	-4.60
USA	-16.78	-16.63	-14.43	-14.28	1.56	1.62	-4.19	-2.83	-3.44	-3.41	-6.37	-6.38
Mexico	-18.99	-18.86	-16.91	-16.79	1.07	1.13	2.30	3.21	2.27	2.29	-3.59	-3.61
Chile	-13.78	-13.66	-11.33	-11.21	1.53	1.58	6.08	6.74	4.98	5.02	-2.02	-2.04
Mercosur	-14.20	-14.10	-11.90	-11.81	0.92	0.97	5.08	5.69	3.92	3.95	-1.76	-1.78
Rest of FTAA	-16.87	-16.73	-14.50	-14.37	1.11	1.17	0.48	1.59	0.42	0.41	-5.28	-5.30
Rest of World	-17.46	-17.34	-15.28	-15.17	1.64	1.69	2.61	3.32	2.06	2.07	-2.55	-2.57

Table 8: Changes in Japanese regional exports and imports (percent)

	Exports						Imports					
	(1) Full free trade		**(2) Rice and sugar excluded**		**(3) Agriculture excluded**		**(1) Full free trade**		**(2) Rice and sugar excluded**		**(3) Agriculture excluded**	
	AUS-JPN	**ANZ-JPN**	**AUS-JPN**	**ANZ-JPN**	**AUS-JPN**	**ANZ-JPN**	**AUS-JPN**	**ANZ-JPN**	**AUS-JPN**	**ANZ-JPN**	**AUS-JPN**	**ANZ-JPN**
New Zealand	2.21	31.41	2.26	31.13	-1.24	25.94	-3.08	34.13	-3.16	32.96	0.40	4.78
Australia	53.46	54.02	53.72	53.66	47.91	47.77	113.57	112.76	92.50	91.77	1.39	1.45
Singapore	0.03	0.46	0.66	0.67	-0.66	-0.71	-3.28	-4.70	-3.34	-4.78	0.26	0.27
South Korea	0.11	0.52	0.59	0.58	-0.57	-0.61	-0.97	-1.03	-0.60	-0.67	0.21	0.22
China	-0.04	0.36	0.54	0.52	-0.61	-0.66	-0.36	-0.41	-0.56	-0.61	0.18	0.18
Other Asean	0.16	0.54	0.54	0.52	-0.57	-0.62	-5.29	-5.37	-0.53	-0.60	0.15	0.14
EU25	0.13	0.52	0.59	0.58	-0.67	-0.73	-0.65	-0.68	-0.68	-0.71	0.29	0.30
USA	0.14	0.52	0.56	0.53	-0.70	-0.76	-3.40	-3.44	-3.57	-3.61	0.42	0.44
Mexico	0.53	0.90	0.92	0.90	-0.75	-0.81	-26.91	-27.54	-27.45	-28.07	0.14	0.15
Chile	0.03	0.42	0.48	0.46	-0.63	-0.69	-0.46	-0.63	-0.74	-0.91	0.08	0.06
Mercosur	0.27	0.66	0.70	0.68	-0.70	-0.75	-5.86	-5.94	-6.93	-7.01	0.21	0.21
Rest of FTAA	0.32	0.70	0.69	0.66	-0.69	-0.75	-4.49	-4.59	-5.26	-5.35	0.23	0.21
Rest of World	0.21	0.62	0.70	0.69	-0.66	-0.71	0.02	0.00	-0.14	-0.16	0.16	0.17